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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
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10/576,247

04/18/2006

Akihiko Okano

03500.517989

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5514 7590 11/01/2007
FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

MCPHERSON, JOHN A

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

11/01/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/576,247

Applicant(s)

OKANO ET AL.

Examiner

John A. McPherson

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/06, 6/06, 9/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 2 is objected to because of the following informalities:

The periods (".") in lines 4 and 9 should be deleted, so that the claim is presented as a single sentence. Additionally, in line 13, "integer.)" should be replaced by --integer)--, so that the claim ends with a period.

In line 7, in the phrase "hydrogen and an alkyl group", the word "and" should be replaced by --or-- because these moieties are alternatives. Similarly, in line 12, "and" should be replaced by --or--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. Claim 2 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "the alkyl group" in line 8 with respect to R2, and again in line 12 with respect to R3. There is insufficient antecedent basis for these limitations in the claim. This rejection can be overcome by replacing "the" with --an-- in both lines 8 and 12.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-12 rejected under 35 U.S.C. 102(b) as being anticipated by EP 1 380 423 [cited in the Information Disclosure Statement filed 4/18/06] (EP '423). EP '423 discloses a method for producing a liquid discharge head comprising the steps of forming a positive-working photosensitive material on a substrate; heating the positive-working photosensitive material, thereby forming a crosslinked positive-working photosensitive material layer; irradiating the crosslinked positive-working photosensitive layer with radiation of a first wavelength; developing to remove the irradiated area of the crosslinked positive-working photosensitive layer to obtain a mold pattern; forming a covering layer of a negative-working photosensitive layer on the mold pattern; irradiating the covering layer with radiation of a second wavelength to harden the covering layer; and removing the mold pattern by dissolution, wherein the positive-working photosensitive material comprises a ternary copolymer containing methyl methacrylate as a main component and methacrylic acid as a thermally crosslinkable factor. See the abstract; paragraphs [0011], [0012] and Figures 5-11. Additionally, the ternary copolymer preferably has a weight -averaged molecular weight of 5,000-50,000 (see paragraph [0033]), and methacrylic acid is present in an amount of 2-30 wt.%, more preferably 2-15 wt.%, of the entire copolymer (see paragraph [0021]). The Examiner

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notes that both disclosed ranges include values which meet the molecular weight and weight% limitations of the presently claimed invention.

Furthermore, with respect to claims 6-9, the positive-working photosensitive material is developed with a developing liquid comprising diethylene glycol monobutyl ether, ethanolamine, morpholine, and ion-exchanged water. See paragraph [0034]. With respect to claim 10, the layer formed so as to cover the patterned positive-working resist layer comprises xylene as a coating solvent. See paragraph [0059].

4. Claims 1-5 and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2004-042396 [cited in the Information Disclosure Statement filed 4/18/06] (JP '396). JP '396 discloses a process for fabricating a liquid ejection head comprising the steps of forming a positive photosensitive resin layer on a substrate; exposing the positive photosensitive resin layer to form a liquid channel pattern; coating a negative coating resin layer on the patterned positive photosensitive resin layer; curing the negative coating resin layer; irradiating the patterned positive photosensitive resin layer; and dissolving the patterned positive photosensitive resin layer to form a liquid channel, wherein the positive resin layer includes a methacrylic system copolymer of methacrylic ester and methacrylic acid. The copolymer has a molecular weight of 5,000-50,000, with methacrylic ester as a principle component and methacrylic acid present in an amount of 2-30 wt.%. The Examiner notes that both disclosed ranges include values which meet the molecular weight and weight% limitations of the presently claimed

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invention. See the abstracts; paragraphs [0016] of the computer-generated translation (a copy of which is included with this Office Action); and Figures 5-12.

Furthermore, with respect to claim 10, the negative coating resin layer is formed by coating the patterned positive photosensitive resin layer with a material comprising an epoxy resin dissolved in xylene. See paragraphs [0059] and [0060] of the computer-generated translation.

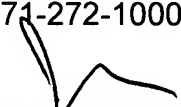
5. Claims 1-5, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0 734 866 [cited in the Information Disclosure Statement filed 4/18/06] (EP '866). EP '866 discloses a process for the production of an ink jet head, comprising the steps of providing a substrate with an energy generating element thereon; forming a photosensitive layer comprising an ionizing radiation decomposable photosensitive resin containing a crosslinkable structure on the substrate; subjecting the photosensitive resin layer to crosslinking treatment; forming a coating resin layer on the crosslinked photosensitive resin layer; hardening the coating resin layer; irradiating the crosslinked photosensitive resin layer through the hardened coating resin layer; and eluting the crosslinked photosensitive resin layer. See the abstract. Exemplified decomposable photosensitive resins include a copolymer of methyl methacrylate and methacrylic acid with a copolymerization ration of 9:1 (see page 9, lines 14-20), and a copolymer of methyl methacrylate and methacrylic acid with a copolymerization ratio of 8/2 and weight average molecular weight of about 180,000 (see page 16, line 37 to page 17, line 3).

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. McPherson whose telephone number is (571) 272-1386. The examiner can normally be reached on Monday through Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



John A. McPherson
Primary Examiner
Art Unit 1795

JAM
10/19/07